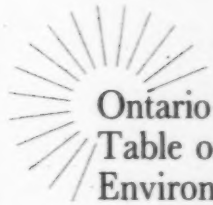
Sectoral Task Force Report

MINERALS



Ontario Round Table on Environment and Economy

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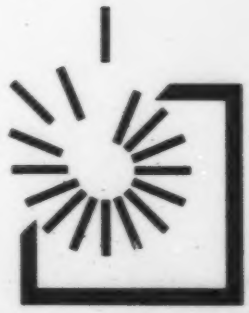

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Ontario Round Table on Environment and Economy

Table ronde de l'Ontario sur l'environnement et l'économie

September 30, 1991

The Honourable Ruth Grier
Chair
Ontario Round Table on
Environment and Economy
790 Bay Street, Suite 1003
Toronto, Ontario
M7A 1Y7

Dear Minister:

The Energy and Minerals Task Force which the Round Table established earlier this year, is pleased to submit its Minerals Sector report. A separate companion report on the Energy Sector is also being forwarded to the Round Table.

Over the past six months, the Task Force has consulted as widely as possible with industry, associations, companies, environmental and other interest groups. The input we have received has been most valuable in focussing on the key issues for achieving greater sustainability in the sector.

The members of the Task Force appreciate having the opportunity to make a contribution to the important work of the Ontario Round Table on Environment and the Economy.

Respectfully submitted,

R.M.R. Higgin, Chair

G.G. Hatch

Michael P. Amsden

L.F. Moore

R. Bertell

Norman Rubin

M. Farrow

R. P. Shervill

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PREFACE

This report is one in a series prepared for the Ontario Round Table on Environment and Economy.

The Ontario Round Table was established by the Government of Ontario to develop a sustainable development strategy for the Province. To assist in the preparation of this strategy, in February of 1991 the Round Table established six sectoral task forces covering Agriculture and Food, Energy and Minerals, Forestry, Manufacturing, Transportation, and Urban Development and Commerce. A Native People's Circle also was established to provide the Native People's perspective on sustainable development. Each task force is made up of knowledgeable people involved in the sector and having a variety of perspectives.

The sectoral task forces were charged with developing a consensus and reporting to the Round Table on how best to begin to achieve sustainability in each sector within the context of the six principles for sustainable development set out by the Round Table in its *Challenge Paper*. Over the past eight months, using a combination of research and consultation, the task forces have documented the state of the sector and the obstacles to reaching sustainability, as well as providing recommendations for action. The consultation program also is described in each report.

The sectoral task force reports will be forwarded to the Ontario Round Table on Environment and Economy so that the recommendations can be considered by the Round Table as it prepares a Provincial sustainable development strategy.

Your comments on this document are welcome. Please send them to The Ontario Round Table on Environment and Economy, 700 Bay Street, Suite 1003, Toronto, Ontario, M7A 1Y7. For information call (416) 327-2161 collect.

EXECUTIVE SUMMARY OF MINERAL SECTOR REPORT

Background

The Energy and Minerals Task Force was established by the Round Table to provide input on the strategic issues and priority actions for implementing sustainable development in the energy and minerals sectors in Ontario. To facilitate this requirement, the Task Force designed a consultation program to seek out and receive input from stakeholders on issues pertaining to sustainable development within each of these relatively discrete economic and public policy fields.

Members of the Energy and Minerals Task Force were:

Dr. Roger Higgin (Chair) City of Toronto	Larry Moore Ministry of Energy	Maureen Farrow Coopers & Lybrand
Mike Amsden Falconbridge Limited	Norm Rubin Energy Probe	Dr. John Gammon Ministry of Northern Development and Mines
Dr. Rosalie Bertell Institute of Concern for Public Health	Paul Shervill Union Gas Limited	Gerry Hatch Hatch and Associates

Following a series of internal workshops and a review of policy positions and reference materials, the Task Force developed two consultation documents which identified key issues, barriers and potential options for advancing sustainable development ideals in each of the energy and mineral sectors. These documents were each distributed for comment to some 70 stakeholders from industry, governments at all levels, labour, environmental organizations and the native community.

Members of the Task Force participated in four general public sessions on sustainable development including a Local Round Table forum in March, a green industry forum in April, a Town Hall meeting in Guelph in May, and a northern Ontario development forum, held in Thunder Bay, in June.

Two forums and a series of individual presentations were organized by the Task Force. The first, organized in cooperation with the City of Timmins, included a multi-stakeholder meeting as was followed by an open public forum. The second forum comprised half day multi-stakeholder workshops for each of the energy and minerals sectors. A series of individual presentations was also made to the Task Force in response to received requests.

The Task Force reviewed the responses to its consultation document and the feedback it received from the above mentioned forums in preparing its conclusions and recommendations.

Task Force recommendations follow.

LIST OF RECOMMENDATIONS

Decision Making

1. The Ministry of Northern Development and Mines should develop either:

   - an appropriate site specific environmental assessment type review procedure (under the jurisdiction of the Minister of Mines), or

   - a Class Environmental Assessment (under the jurisdiction of the Minister of the Environment),

   in order to facilitate broad stakeholder and public input on environmental issues related to mineral developments. Once approved, this review mechanism would apply to all subsequent major mineral developments and expansions in Ontario.

2. The Government of Ontario should develop a predictable approvals process which incorporates multi-stakeholder input. The approvals process should be facilitated by preferably one ministry. Unresolved issues flowing from the consultation processes, both within and external to government, should be forwarded to the appropriate Minister for decision on the next steps in the process.

3. The Ministries of Natural Resources (MNR) and Northern Development and Mines (MNDM) should be required to annually and publicly report on the status of the sectors under their respective jurisdictions. These reports should incorporate monitoring data from the Ministry of the Environment on the state of the environment (including air, land, water and biota) impacted by the economic sub-sectors for which MNR and MNDM have jurisdiction.

Minerals Technology

4. The Government of Ontario, in cooperation with the Government of Canada, should increase the incentives for improved technology development and application. These incentives should include broadening the applicability of quick write-off provision for capital expenditures which improve product and process performance relative to environmental and competitiveness criteria.

5. The Minister of the Environment, in conjunction with the Ministers of Mines and Industry Trade and Technology, should review current environmental guidelines and standards which apply to mineral industry against valid monitoring data to encourage the use of best available process and control technology, ensure consistent enforcement, and verify that the environment is improving.

6. The Government of Ontario should assist in the establishment of a Centre of Excellence on Mineral Processing Technology to holistically assess technologies for their contribution to sustainable development in Ontario. As part of its mandate, this Centre of Excellence, in working with the proposed Centre of Excellence for Human Health and Ecosystem Integrity, should act as a clearing house for environmentally appropriate technologies demonstrated to be effective.

7. The Government of Ontario, in conjunction with the Ontario Mining Association and the Canadian Association of Recycling Industries, should establish consumer education programs on product durability, life cycle costs, and material recycling to make consumer demand more consistent with sustainable development objectives.

Comprehensive Data Bases and Monitoring Systems

8. The Government of Ontario should establish an independent Centre of Excellence on Human Health and Ecosystem Integrity with the mandate to provide monitoring, database development, basic research and information dissemination across all sectors of the economy related to environmental conditions which pose a risk to human health and to ecosystems.

9. All Government of Ontario Ministries and Agencies which collect information on environmental conditions should provide this information to the new Centre on an ongoing basis.

10. All Government of Ontario Ministries and Agencies involved in environment-related policy and programmes should publish "state of the environment reports" and data on an annual basis.

11. Increased funding should be provided for basic data collection and research related to the assessment and definition of the risks posed by chemicals and other contaminants to human health and the natural ecosystem.

12. Industry, in cooperation with government, should undertake to establish better baseline data on the state of the natural environment in advance of new mineral development taking place and to undertake ongoing monitoring of the surrounding environment as mineral development proceeds and eventually closes out.

Full Cost Pricing and Accounting for Minerals

13. Full cost pricing should be adopted as a longer term goal for the Ontario minerals sector. In the short term, the implications of adopting full cost pricing policy in

Ontario should be thoroughly examined against feasibility, competitiveness, sustainability and social equity criteria. In addition, more quantified data should be developed regarding environmental, social and human health impacts.

14. The Ministries of Mines and Treasury and Economics should provide leadership in instituting and implementing the accounting for the full cost of providing government services and for the costs of closure and clean-up.

15. The Government of Ontario should request the Canadian Institute of Chartered Accountants to examine and advise on the appropriate disclosure and accounting for mine closure and clean-up liabilities for the Ontario mineral sector.

Minerals and Competitiveness

16. The Ontario mining industry should have five years to adapt to currently announced requirements, including implementation of the provisions of the new Mining Act, the abatement regulations under Municipal Industrial Strategy for Abatement and the requirements under the revisions to Regulation 308. During this period, the Industry, working in conjunction with non-industry stakeholders and the Ministries of Environment and Mines, should monitor the effectiveness of these regulations in protecting the environment.

17. That the Ontario Mining Association should prepare interim and final reports on the effectiveness of these regulations (including strengths and weaknesses) in improving the state of the air, water, land and biota impacted by mining operations.

18. In the interim, the Ministry of Mines should coordinate a review of all government regulations that relate to the minerals industry to assess whether the regulatory regime can be made more predictable and less time consuming without jeopardizing employee health and safety or the integrity of the environment. This regulatory review should be undertaken by a multi-stakeholder group involving of a broad range of stakeholders.

Rehabilitation of Mines Sites

19. The Ministry of Northern Development and Mines, the Ministry of Natural Resources and the Ministry of Treasury and Economics should cooperatively develop programmes for the clean up and remediation of (1) abandoned mines and pits, and (2) inadequately rehabilitated mines and pits, with the objective of having programmes in place as soon as possible.

20. Under these programmes, highest priority should be placed on the clean up and remediation of abandoned mine sites and tailings which pose a risk to human health, public safety and/or to the environment.

21. The Government of Ontario should assume the responsibility and financial liability for the rehabilitation program, having first ensured that all surface and underground rights to the lands revert to the Crown for relicensing.

22. The revenues required to finance this clean up programme should come from the existing tax base. Where appropriate, funding for local improvement and community employment programmes should also be utilized.

23. Where a new owner is prepared to undertake mineral development on contaminated lands, the Government of Ontario should negotiate environmental liability requirements before licensing mineral development. Assurances should be made that the natural environment will be left in an acceptable state once mineral development has taken place. Further, all negotiated agreements should be made public once formalized.

Reduction, Reuse and Recycling

24. The Government of Ontario, in addition to promoting recycling, should place a high priority on setting and achieving waste reduction targets in the minerals sector by encouraging more durable infrastructure and consumer products with greater potential for rehabilitation and repair.

25. The Government of Ontario should take the lead in establishing national standards for public infrastructure lifetimes and consumer durable designs.

1. TASK FORCE FINDINGS AND RECOMMENDATIONS FOR MINERALS SECTOR

1.1 Introduction

The Ontario minerals sector is an important component of our economy. It not only provides a major contribution to the export earnings of the province, but is an economic mainstay of northern Ontario and many of its communities.

It is difficult to imagine our modern world without the metals and minerals which form the basis of our transportation and urban infrastructure and the myriad of consumer products upon which we rely for our convenience oriented 20th century lifestyle. Changing the present system of production and consumption from one which is largely "once through" to one which is effectively closed looped is essential to achieving sustainability for the mineral sector.

Many minerals, which are used in the manufacture of products, are part of a complex world commodity market. Despite Ontario's advantages which include an excellent mineral endowment, an extensive infrastructure, strong technical capabilities and a skilled labour force, there are serious concerns that our competitiveness is threatened by world economic and market developments.

Metal mining and processing is a business in which small amounts of valuable commodities are extracted from huge amounts of native rock. Recent investments in modern processing and pollution control technology have made the province's mining sector among the most environmentally responsible in the world. Notable clean-up successes have been achieved by INCO, Falconbridge and other major producers in the past decade and yet this is not enough. Both environmentalists and industry acknowledge that more must be done. Key questions are how much more should be done and how quickly can it be achieved?

The industry feels over-regulated following recent changes to the Mining Act and other regulatory requirements. In the industry's view, more regulation, no matter how well intentioned, will seriously undermine its competitive position.

Reconciling the objectives of maintaining a healthy mining and minerals sector while protecting and enhancing the environment, will challenge governments, industry, environmental groups and other stakeholders. There is evidence of much common ground, although the need for trade-offs and compromise remain.

While much progress has been made during the 1980s, the Task Force believes that sustainability in the minerals sector can only be achieved if all interested parties work effectively together.

1.2 IMPROVED DECISION MAKING IN THE MINERALS SECTOR

1.2.1 Background

The mineral sector consists of three sub-sectors including metallic minerals, industrial minerals and structural aggregates. Each sub-sector is highly regulated by federal and provincial statutes and by the agencies having authority and responsibility for these laws and regulations.

The metallic minerals sector operates primarily in northern Ontario. This industry is regulated principally by the provisions of the Ontario Mining Act under the auspices of the Ministry of Northern Development and Mines (MNDM). Recent amendments to the Act, which were worked out in concert with the industry, require the establishment of financial reserves for post-operational clean up and restoration of mineral developments.

The industrial minerals and structural aggregates sub-sectors operate primarily in southern Ontario, although aggregates (sand and gravel) are extracted all over the province. Development of these deposits is regulated by the Ontario Ministry of Natural Resources (MNR) under the Aggregate Resources Act. This statute requires certain procedures to be followed during the active extraction phase and also requires complete restoration of the site when operations are complete.

1.2.2 Stakeholders Views and Options

The traditional decision making processes for the mineral sub-sectors relate to the requirements for permits and operating licences under the provisions of the governing Acts and Regulations. Interaction between the industry and either MNR or the Ministry of Mines is frequent. As part of the permitting and licensing processes, conditions are often negotiated which bear on mitigation of environmental impacts.

The industry representatives consulted by the Task Force clearly feel that the industry is now over-regulated and that, in particular, the conditions related to native land and environmental protection, which are placed on exploration permits, are onerous and unreasonable.

Non-industry stakeholders have not traditionally been involved to the same degree in the development of Ontario's mineral regulations. The Minister of Mines has, however, recently established an advisory committee on the Mining Act which includes a number of non-industry stakeholder groups to ensure broader public input to Act amendments. The industrial mineral and aggregate sub-sectors have considerably more opportunity for broader public input to decisions on new pits and expansions, due to the provisions of the Aggregate Resources Act. Application for new or expanded operations often draws public reaction from local landowners and from interest groups concerned with preservation of the natural environment.

1.2.3 Conclusions

The Task Force concludes that although the minerals sector is generally highly regulated and accountable to the respective agencies (MNR & MNDM), non-industry stakeholders should have greater access to the decision making processes related to mineral development activities to ensure broadly endorsed public accountability. Public expectations are high in this regard because, in many cases, this industry operates on crown land.

In developing its positions on project undertakings, legislation, and regulations, the industry has not generally utilized multi-stakeholder processes in a proactive manner. The industry feels misunderstood and inappropriately maligned by the public and environmental groups. The responsible government agencies recognize the need for more public consultation and stakeholder input and are putting in place mechanisms to achieve this. However, these mechanisms still sometimes fall short of multi-stakeholder collaborative planning, especially at the early stages of decision making. The Task Force believes that the government must play, and be publicly seen to play, the "honest broker" role between industry and non-industry stakeholders.

In the view of the Task Force, there is no substitute for face to face meetings between the industry, interest groups and the public to resolve either issues of a generic nature, such as the content of Regulations, or issues which are site-specific. It is the role of the government agencies involved to facilitate full interest group and public input on decisions of public policy in the mineral sector to ensure that long-term environmental concerns are adequately addressed in the planning and decision making processes.

The Task Force believes that greater public consultation and input for all new mineral developments in Ontario is required. The Task Force discussed at length two options to achieve this objective but could not reach consensus on which option it prefers. The two options are:

- Development of an environmental assessment type process under the Ontario Mining Act
- Development of a suitable Class Environmental Assessment under the Ontario Environmental Assessment Act

Regardless of which option is adopted, the process should be prepared in consultation with a wide variety of stakeholders. Once approved, it should be applied to all significant site specific mineral developments.

1.2.4 Recommendations

1. The Ministry of Northern Development and Mines should develop either:
    - an appropriate site specific environmental assessment type review procedure (under the jurisdiction of the Minister of Mines), or

- a Class Environmental Assessment (under the jurisdiction of the Minister of the Environment),

in order to facilitate broad stakeholder and public input on environmental issues related to mineral developments. Once approved, this review mechanism would apply to all subsequent major mineral developments and expansions in Ontario.

2. The Government of Ontario should develop a predictable approvals process which incorporates multi-stakeholder input. The approvals process should be facilitated by preferably one ministry. Unresolved issues flowing from the consultation processes, both within and external to government, should be forwarded to the appropriate Minister for decision on the next steps in the process.

3. The Ministries of Natural Resources (MNR) and Northern Development and Mines (MNDM) should be required to annually and publicly report on the status of the sectors under their respective jurisdictions. These reports should incorporate monitoring data from the Ministry of the Environment on the state of the environment (including air, land, water and biota) impacted by the economic sub-sectors for which MNR and MNDM have jurisdiction.

1.3 MINERALS TECHNOLOGY

1.3.1 Background

Improved technology offers opportunities to reduce the environmental impacts associated with mineral development and to enhance industry's competitiveness through improved efficiency and the development and commercialization of technology-based processes and services.

All phases of mineral exploration and development depend on sophisticated process and product technologies which require sizable investments of money and technical personnel. Successful technology development efforts require well managed processes of innovation and commercialization.

Technologies which improve both economic and environmental performance have been spurred by the setting and enforcement of stringent environmental protection standards by government and by senior managers who decide to address environmental requirements through process redesign. Recent mineral processing developments by Inco, Falconbridge and several others are cases in point.

Apart from the success stories cited above, industry has been reluctant to focus its energies on the development of front end technologies, relying instead on back end pollution abatement equipment for resolving environmental problems. As a consequence, high yield, efficient and cleaner front end processing technologies have not come to the fore to the extent that they are needed.

The mining industry now recognizes that front end technological developments are required in order to meet strict environmental requirements, improve profitability and enhance competitiveness.

1.3.2 Stakeholders Views and Options

The industry stakeholders expressed the need for more government incentives for research, development and implementation of improved technology, including the reinstatement of fast write-offs for capital expenditures. Comments from non-industry stakeholders included those affected by technology should have a greater say in decisions regarding its funding and implementation, and assisting industries to pollute less by means of public funding reduces expenditures in other areas of social priority where the role of government is paramount.

The view that more cooperative efforts between industry, universities and government are needed to identify and assist research and development was broadly expressed. All stakeholder groups identified the lack of precise information linking environmental effects to economic activities as a barrier to cleaner technology development.

Other comments raised included: those working within the Centres of Excellence should be in closer touch with the needs of industry; planned obsolescence should be discouraged in the design of products that use non-renewable resources; recycling, reclamation and rehabilitation technologies require greater public assistance.

The dominant view expressed was the need for increased incentives from government in the areas of front end "clean" process and recycling technologies and the need for more integrated approaches problem resolution.

1.3.3 Task Force Conclusions

Task Force recognizes the potential for improving our development, use and export of appropriate technology to reconcile environmental and economic objectives. It points to more integrated technology development strategies to achieve this.

Technologies that are clean, resource efficient and commercially viable clearly represent the common ground between economic development, human health protection and ecosystem integrity.

Front end approaches offer much greater opportunity for meeting environmental and economic objectives than "end of pipe" add on technological solutions.

Cooperative efforts among all involved in pure and applied research including industry, academia, and government are required to most effectively utilize available resources for the research and development of sustainable solutions. Greater incentives are required for the development and adoption of sustainable technologies by producers and consumers.

The development and application of recycling, reuse and materials substitution technologies are clearly required.

1.3.4 Task Force Recommendations

4. The Government of Ontario, in cooperation with the Government of Canada, should increase the incentives for improved technology development and application. These incentives should include broadening the applicability of quick write-off provision for capital expenditures which improve product and process performance relative to environmental and competitiveness criteria.

5. The Minister of the Environment, in conjunction with the Ministers of Mines and Industry Trade and Technology, should review current environmental guidelines and standards which apply to mineral industry against valid monitoring data to encourage the use of best available process and control technology, ensure consistent enforcement, and verify that the environment is improving.

6. The Government of Ontario should assist in the establishment of a Centre of Excellence on Mineral Processing Technology to holistically assess technologies for their contribution to sustainable development in Ontario. As part of its mandate, this Centre of Excellence, in working with the proposed Centre of Excellence for Human Health and Ecosystem Integrity, should act as a clearing house for environmentally appropriate technologies demonstrated to be effective.

7. The Government of Ontario, in conjunction with the Ontario Mining Association and the Canadian Association of Recycling Industries, should establish consumer education programs on product durability, life cycle costs, and material recycling to make consumer demand more consistent with sustainable development objectives.

1.4 COMPREHENSIVE DATA BASES AND MONITORING SYSTEMS

1.4.1 Background

In order to provide complete baseline data on both our environment and economy, including information regarding mineral production and use, we need to be more focused in collecting, analyzing and disseminating scientific, technical and social information. To be credible, the information needs to accurate, relevant, independent, and capable of capturing past, present and future consequences of our choices. Both stakeholders and the Task Force feel this can be best accomplished through a public monitoring and open reporting system.

1.4.2 Stakeholder Views and Options

Most stakeholders consulted recognized both the deficiency in current data sources and lack of ability to draw meaningful conclusions from these sources.

1.4.3 Task Force Conclusions

The Task Force agrees that basic to this effort is effective collection of relevant data. Ingredients of a relevant monitoring system include:

- Standardization of air, water and land monitoring for toxic substances to facilitate information sharing with neighbouring jurisdictions.

- Monitoring and data collection on ecosystems, including localized habitats, biodiversity, reproductive integrity, growth and hardiness, in a way which facilitates sharing with neighbouring jurisdictions.

- Human health data collection on sensitive parameters such as hospital admissions for respiratory emergencies, ischemic heart episodes, outbreaks of serious infectious disease (immune incompetence), endocrine and nervous system dysfunction and adverse pregnancy outcomes, in a way which facilitates sharing data with neighbouring jurisdictions.

- Scientific efforts to recoup the historical trends for each of these aspects of the ecosystem and determine valid parameters describing the interaction of these variables, supplementary toxicological and clinical studies, and better utilization of data already being collected within isolated medical, biological and chemical specialities.

Biological and ecological alarm systems to give early feedback on the development of policies and projects which can be expected to have serious negative effects in the future.

The current system of regulation, which neglects the interactive effects of multiple pollutants and multiple pathways, and which focuses on such extreme and late health effects as cancer, is seen as inadequate for the complex 21st century society.

The findings of monitoring and data collection systems will need to be utilized in a major way for decision making on mineral strategy, electrical generation, transportation, status of mining and metallurgy, environmental standards, labour legislation, competitiveness, direct and indirect contributions to Ontario's economy, and willingness to risk Ontario for the sake of international competitiveness.

Recommendations

8. The Government of Ontario should establish an independent Centre of Excellence for Human Health and Ecosystem Integrity with the mandate to provide monitoring, database development, basic research and information dissemination across all sectors of the economy related to environmental conditions which pose a risk to human health and to ecosystems.

9. All Government of Ontario Ministries and Agencies which collect information on environmental conditions should provide this information to the new Centre on an ongoing basis.

10. All Government of Ontario Ministries and Agencies involved in environment-related policy and programmes should publish "state of the environment reports" and data on an annual basis.

11. Increased funding should be provided for basic data collection and research related to the assessment and definition of the risks posed by chemicals and other contaminants to human health and the natural ecosystem.

12. Industry, in cooperation with government, should undertake to establish better baseline data on the state of the natural environment in advance of new mineral development taking place and to undertake ongoing monitoring of the surrounding environment as mineral development proceeds and eventually closes out.

1.5 FULL COST PRICING AND ACCOUNTING FOR MINERALS

1.5.1 Background

Full cost accounting and pricing have been advocated as innovative means to encourage sustainability in our use of natural resources and the adoption of more conserving behaviours on the part of individuals and institutions.

Current pricing systems do not generally capture many of the environmental and social costs associated with economic activities. This is true for activities in the mineral industry as it is in other sectors of our economy.

As a long term focus, full cost pricing and accounting would provide producers and consumers with the necessary information to make decisions that are consistent with sustainable development principles.

As a new concept, current understanding of the principles of full cost accounting and pricing is inadequate for the broad based common acceptance of their application. Tools which would facilitate an accurate assessment of environmental, social and human health externalities also require further development and demonstration in order to gain the acceptance of the majority of stakeholders.

Full cost pricing and accounting are closely related to the other issues considered by the Task Force including improved technology, competitiveness, and information. These linkages are especially important regarding the role which prices play in a market based economy.

With the majority of production in the mineral sector being marketed internationally under global commodity prices, there is limited scope to begin moving towards full cost resource pricing and still maintain adequate returns for industry producers.

1.5.2 Stakeholder Views and Options

Industry argues that full cost accounting needs to be more extensively studied before it is applied. It believes that particular emphasis needs to be placed on both the cost and benefits of full pricing policy.

Environmentalists are generally in favour of the policy and its application to current and future industry operations.

Almost all stakeholders feel that data on competitiveness, environmental performance and other dimensions of the industry's operations needs to be collected to assist in the formation of sound policy.

There is a general recognition, that over time, full cost pricing will be required to address environmental concerns that stem from our current patterns of production and consumption.

1.5.3 Task Force Conclusions

The Task Force concludes that the impact of adopting a full cost pricing policy should be studied. Part of this study (and review) should assess the most effective means of implementing the policy if it is viewed favourably in terms of its costs and benefits to society. More quantitative data on environmental and social costs need to be collected in support of evaluating the potential effectiveness of this policy.

As part of this review, government should assess the current subsidies and support programs that presently exist for the mineral industry in relation to sustainable development criteria.
In addition, government should examine accounting more fully for the services it provides.

Over the longer term, the Task Force believes that a system of incentives should be developed and implemented to encourage sustainable patterns of production and consumption by industry, governments and individuals alike.

As part of this modified system, manufacturers should be encouraged to recycle minerals and increase their use of recycled materials for production purposes.

1.5.4 Task Force Recommendations

13. Full cost pricing should be adopted as a longer term goal for the Ontario minerals sector. In the short term, the implications of adopting full cost pricing policy in Ontario should be thoroughly examined against feasibility, competitiveness, sustainability and social equity criteria. In addition, more quantified data should be developed regarding environmental, social and human health impacts.

14. The Ministries of Mines and Treasury and Economics should provide leadership in instituting and implementing the accounting for the full cost of providing government services and for the costs of closure and clean-up.

15. The Government of Ontario should request the Canadian Institute of Chartered Accountants to examine and advise on the appropriate disclosure and accounting for mine closure and clean-up liabilities for the Ontario mineral sector.

1.6 MINERALS AND COMPETITIVENESS

1.6.1 Background

Metallic minerals are sold in competitive international markets where Canadian metal producers are price takers. As a result, they have little flexibility in absorbing increased production costs.

While Ontario has favourable geology, skilled miners and technological strengths, other areas of the world show equally high potential for mineral development. While Ontario miners are among the most skilled, they are among the highest paid as well, and our overall cost structure, which includes capital costs, taxation and several other key elements, poses concerns for continued presence in many markets for which we compete.

With capital and technology being internationally mobile, Ontario must compete for exploration and investment dollars with other favourable jurisdictions. As a result, exploration and mineral development investments, which are the life blood of many small northern based towns in this province, are susceptible to strong foreign competition.

The approvals processes for new developments is also an important factor in the investment decisions by major mineral development companies. Many recent changes in Ontario's legislative and regulatory environment are perceived to have made mining less attractive, from cost and risk perspectives. In particular, the industry feels that the multiplicity of federal and provincial agencies involved in the regulations and approvals processes in Ontario have created a climate of uncertainty which poses an additional barrier to new investment.

New financial assurance requirements in Ontario for mine closure have placed many junior mining companies at a distinct disadvantage as they will have trouble raising the necessary capital to provide this assurance in advance of developing and operating a mine. Recent environmental legislation which includes Municipal Industrial Strategy for Abatement, Clean Air Program, Bill 220 - liability for property contamination - and the New Mining Act, add to the regulatory burden and complexity.

Environmental impacts result throughout most of the stages of the mineral development process. These impacts include: the physical disruption of lands and habitat, the release of heavy metals and acid precursors to local and regional air and water sheds, the leaching of heavy metals and acids from tailing ponds, and the generation of significant volumes of waste material. Moreover, large quantities of energy are used in extraction, processing, and upgrading of minerals.

1.6.2 Stakeholder Views and Options

Industry participants expressed difficulty in having to cope with the pace of change and full range of environmental regulations which they feel place Ontario producers at a distinct competitive disadvantage. Many mining industry participants perceive the approvals process for new mines and mine extensions as far too cumbersome.

Some residents of northern Ontario believe that northern jobs are being sacrificed for southern votes. They feel that those most affected by mineral development activities should have the greatest say in how that activity should be regulated. The fear was also voiced that environmental legislation, particularly the proposed Environmental Bill of Rights, will become paramount over other legislation.

Many industry stakeholders expressed concerns that a level playing field, in terms of environmental and other regulations is required and that new requirements will be brought in without giving current producers enough time to make the necessary adjustments. Concerns that there will be insufficient electrical power available for operations from Ontario Hydro and that fully costing electricity will increase the costs of operations significantly were also expressed.

Many mining industry participants recognize their responsibility to protect the environment, but believe they need to be given the opportunity and more time to do so. They feel that more incentives are required to accelerate the development and application of technologies that will improve their environmental and economic performance.

Environmentalists commented that no element of society should be excused of environmental responsibility because standards are lower elsewhere in the world, and that the legacies of past mineral operations must be avoided.

1.6.3 Task Force Conclusions

The Task Force notes the forceful and vocal concerns of the Ontario minerals sector and believes that a period in which industry participants can both adapt to the new requirements and assess their effectiveness in protecting the environment is needed before further environmental requirements are put in place. The Task Force believes a more predictable approvals process is required and that it should be coordinated through the Ministry of Mines. The Task Force also believes that the Government of Ontario should confirm that the minerals sector is an important part of the provincial economy and that the federal government needs to work with international bodies to harmonize regulations and standards that apply to the minerals industry.

Further, it concludes that greater public education about the costs and benefits of the mineral development industry to Ontario should be undertaken.

The mining industry is heavily regulated and there have been a significant number of new regulations put in place relating to its environmental performance over the past few years. As a result, significant expenditures have been made by Ontario based mining companies.

The task force concludes that there is a need for government to encourage accelerated investment by industry with transitional incentive programs for the development and implementation of advanced process technologies. Over time, these investments will enhance the viability and sustainability of the industry.

The environmental performance of the mining industry has improved over the past decade. Further improvements are both needed and expected. Yet the mobility of capital internationally suggests that regulatory requirements and the investment climate in Ontario should not be out of line with other producing areas. We need to find pathways that allow for continuous improvements in the environmental performance of the mineral industry which don't place us at a competitive disadvantage internationally.

1.6.4 Task Force Recommendations

16. The Ontario mining industry should have five years to adapt to currently announced requirements, including implementation of the provisions of the new Mining Act, the abatement regulations under Municipal Industrial Strategy for Abatement and the requirements under the revisions to Regulation 308. During this period, the Industry, working in conjunction with non-industry stakeholders and the Ministries of Environment and Mines, should monitor the effectiveness of these regulations in protecting the environment.

17. That the Ontario Mining Association should prepare interim and final reports on the effectiveness of these regulations (including strengths and weaknesses) in improving the state of the air, water, land and biota impacted by mining operations.

18. In the interim, the Ministry of Mines should coordinate a review of all government regulations that relate to the minerals industry to assess whether the regulatory regime can be made more predictable and less time consuming without jeopardizing employee health and safety or the integrity of the environment. This regulatory review should be undertaken by a multi-stakeholder group involving of a broad range of stakeholders.

1.7 REHABILITATION OF MINE SITES

1.7.1 Background

Environmental policies, regulations and practices applicable to the Ontario minerals sector have evolved to require proper close-out and repair of mineral sites following depletion of economic reserves. Recent amendments to the Ontario Mining and Aggregate Resources Acts explicitly require such rehabilitation as part of closure and require that adequate funds be set aside for such purposes.

Two situations require resolution; where sites were abandoned in a state of rehabilitation which, although reasonable at the time, is no longer acceptable by today's standards, and where sites were abandoned with little or no attempt at rehabilitation.

The operative question is who should bear the liability and responsibility for restoration of the estimated 3000 abandoned sites and for dealing, on a priority basis, with the estimated 300 that may pose a hazard to public safety, human health or the environment?

1.7.2 Stakeholder Views and Options

Most stakeholders agree that rehabilitation of abandoned sites is necessary where risks to the public and/or the environment are evident. There is less consensus about sites where aesthetics appear to be the predominant concern.

There is even less consensus on who should pay. The industry position is that if operations met the requirements in force at the time, then current owners should not be responsible to meet today's tougher requirements. Accordingly, responsibility for past operations should rest in the public domain, and government should pay for both environmentally necessary and aesthetically desirable remediation and restoration.

Many stakeholders believe that the "polluter pay" principle should apply. Past problems should be cleaned up to modern standards by the company responsible (or its successors). Only where no responsible entity exists should the public purse foot the bill.

There is little disagreement that the cost of meeting the requirements of current statutes and regulations, which require proper close out and rehabilitation, should be borne by the operator. One issue raised was whether special tax treatment should be afforded to these costs.

1.7.3 Task Force Conclusions

The Task Force concludes that action should be taken to remediate and rehabilitate those abandoned sites, prioritizing those which pose a risk to human health, public safety or the environment. The responsibility for this action should be assumed by the Crown. Where responsibility is so assumed, all licenses on the subject lands should be revoked and all surface and underground rights should revert to the Crown for relicensing.

Having placed the responsibility for action with the Crown, there is the issue of how to offset the increased public expenditures involved. The Task Force believes that a number of approaches to this are feasible including: using existing tax revenues; undertaking site clean-ups as part of local improvement projects; and providing employment stimulus to neighbouring communities.

1.7.4 Task Force Recommendations

19. The Ministry of Northern Development and Mines, the Ministry of Natural Resources and the Ministry of Treasury and Economics should cooperatively develop programmes for the clean up and remediation of (1) abandoned mines and pits, and (2) inadequately rehabilitated mines and pits, with the objective of having programmes in place as soon as possible.

20. Under these programmes, highest priority should be placed on the clean up and remediation of abandoned mine sites and tailings which pose a risk to human health, public safety and/or to the environment.

21. The Government of Ontario should assume the responsibility and financial liability for the rehabilitation program, having first ensured that all surface and underground rights to the lands revert to the Crown for relicensing.

22. The revenues required to finance this clean up programme should come from the existing tax base. Where appropriate, funding for local improvement and community employment programmes should also be utilized.

23. Where a new owner is prepared to undertake mineral development on contaminated lands, the Government of Ontario should negotiate environmental liability requirements before licensing mineral development. Assurances should be made that the natural environment will be left in an acceptable state once mineral development has taken place. Further, all negotiated agreements should be made public once formalized.

1.8 REDUCTION, REUSE AND RECYCLING

1.8.1 Background

The largely once through life cycle system, of which the mining and processing of metallic and industrial minerals is the first step, lies at the heart of the non-sustainable aspects of the mining and minerals sector.

Ore is processed into concentrate which is used to produce metals. Metals are used in almost every part of the physical infrastructure including transportation and communication systems, buildings, and all major consumer goods. Structural aggregates are also used in this infrastructure, largely for the construction of roads and buildings.

All physical infrastructure and consumer products, however, are used and eventually discarded.

In order to alleviate the environmental impacts associated with this once through system, considerably broader and enhanced efforts need to be put into 3R (reduction, reuse and recycling) strategies.

Reduction - Reducing the amount of materials required by focusing on needs, extending lifetimes of infrastructure and products, and improving infrastructure and product quality.

Re-Use - Repairing and refurbishing infrastructure and consumer goods.

Recycling - Returning spent materials to the raw materials stream to be reprocessed and turned into new products.

1.8.2 Stakeholder Views and Options

All stakeholders agree that metal and minerals recycling are important in the long term. Disagreements arise as to how this objective should be achieved. Several stakeholders felt that market forces should determine how much material is recycled. Others felt that government incentives, public education and consumer information should be used.

Obstacles are posed by some existing environmentally oriented regulations that classify scrap as a hazardous waste which are seen by many as counter productive; especially when the alternatives to recycling this material may be more environmentally damaging from an overall perspective.

1.8.3 Task Force Conclusions

The Task Force concludes that the focus at the moment is largely on recycling, the third of 3Rs. Recycling, although important, is inherently a back-end strategy. Once materials are discarded, it makes good sense to attempt to route these to the materials stream rather than landfill. However, in the view of the Task Force, the focus must shift to reduction and reuse. In particular, extending the life of existing infrastructure and products, through greater incentives to refurbish and repair, must be a starting point. A further strategy is to design infrastructure and products that will last longer and be more amenable to repair.

The conventional wisdom has shifted significantly from that of the 1970s and 1980s. No longer is planned obsolescence an acceptable design philosophy for consumer durables. Quality, reliability and long in-service lives are features which now command a premium in the market place. The ability to pay higher initial prices raises social equity issues.

The Task Force concludes that two parallel approaches to waste reduction require pursuit.

- Tougher standards for performance, durability and serviceability of infrastructure and consumer durables.

- Differential tax rates for renovation, replacement and rehabilitation of infrastructure and consumer durables compared to new buildings and products

In addition, increased prices should be charged for the landfill of discarded materials and products. This should be achieved by a provincially imposed base levy on all landfill and waste disposal sites.

Improved consumer information and labelling of products as well as appropriate government procurement policies are also part of the solution.

The task of changing from the historic once through system, even modified with recycling, is enormous and will require vision and persistence by government, private corporations and consumers if it is to be achieved.

The linkages to the mineral sector are obvious. Every tonne of material that remains in service or is recycled reduces primary resource extraction requirements by an equivalent amount. Vertically integrated mineral producers may be more comfortable with this new economic reality. However, others will regard these changes as threatening.

1.8.4 Task Force Recommendations

24. The Government of Ontario, in addition to promoting recycling, should place a high priority on setting and achieving waste reduction targets in the minerals sector by encouraging more durable infrastructure and consumer products with grater potential for rehabilitation and repair.

25. The Government of Ontario should take the lead in establishing national standards for public infrastructure lifetimes and consumer durable designs.

APPENDICES

A. Minerals Data Base

B. Stakeholder Lists and Views

C. Minerals Consultation Document

APPENDIX A MINERALS DATA BASE

Brief Background to Ontario's Mineral Sector

Introduction

The purpose of this Appendix is to provide a brief overview of the economic and environmental aspects of Ontario's mineral sector and to sketch out several forecasts of expected demand for five internationally traded commodities to the year 2000 and in some cases beyond. This background information, while sketchy, is intended to provide a context for decisions taken in relation to patterns of mineral resource development and use in Ontario. The Task Force recognizes that the information on the environmental effects of mineral development and use is limited and has recommended that this limitation be overcome.

Section A-1 Economic Information

The mineral sector in Ontario comprises three relatively distinct sub-sectors including metallic minerals, industrial minerals and structural aggregates.

Metallic minerals are largely mined and refined in Northern Ontario and exported to international markets. These commodities, which include base and precious metals, account for some 77% of the revenues associated with mineral production in the province.

Industrial minerals, which include graphite, salt and gypsum, among others, account for roughly 4% of Ontario's mineral production by value.

Structural aggregates, which include cement, sand, gravel and crushed stone, among others, account for 18% of Ontario's mineral production by value.

Both industrial minerals and structural aggregates are largely mined or extracted and consumed in southern Ontario.

The ore bodies and deposits which hold the metals, industrial minerals or aggregates are classified as non-renewable resources. Once brought into production these resources have finite lives. The minerals themselves, however, can be reused or recycled as long as there is sufficient energy to upgrade their quality to a marketable grade.

Ontario is a major world producer of mineral commodities and ranks among the world's top ten producers of nickel, zinc, cobalt, gold, silver and copper. In addition, Ontario has one of the highest consumption rates of structural aggregates in the world.

Ontario's top minerals, ranked by value for 1989 were nickel, gold, copper, uranium, zinc, cement, stone, sand and gravel, salt and lime.

While the mineral industry in Ontario accounts for a relatively small percentage (approximately 2%) of the provinces gross provincial product, it contributes significantly to our balance of trade account. Mineral development has played a significant role in the economic history of the province, particularly the development and maintenance of Ontario's north.

Direct employment levels in the mineral industry have declined since the late 1970s and now stand some 35,000. Indirect industry employment is estimated between 50 and 150 thousand. Mining as a percentage of employment in Northern Ontario has declined from 11.3 percent to 7.7 percent over the period from 1980 to 1987. This decline reflects a general trend towards increasingly capital intensity as a means of maintaining price competitive in international markets.

Metallic Minerals

Revenues from the metallic minerals industry amounted to $4.9 billion in 1990. Metal producers export some 90% of their annual production. The largest markets for metal commodities include the United States, United Kingdom, other European nations, Japan and other countries of the far east with the markets being commodity specific.

Labour rates in the metal mining industry are the highest of all industry classifications in Ontario and represent roughly 40% of the cost structure for mineral producers. Other components of metal mining cost structure include, in descending order of importance, capital expenditures (25 - 30%), government mandated costs (20 - 25%), exploration and development (10%) and prospecting (1%).

Over the past several decades there has been a 100 fold increase in the size of the average mine (capacity). A typical mine now processes some 3000 tonnes of ore per day. As a result, mine capacity is slow to come on stream. This contributes to both price instability and increased financial risk for investors.

Over the past 40 years, the price for most metal commodities has tended to decline slightly and in real dollar terms has stayed within the $10-15 per short tonne range. With Ontario producers facing a cost squeeze in terms of rising production costs and generally flat market prices, there has been a concerted effort to improve production efficiencies, lower labour content and to improve energy efficiency.

Short term reserves for most metals are sufficient, however, severe reserve shortages are apparent for copper and zinc.

Government incentives have historically played a large role in the development of the metal mining industry in Ontario and Canada, with both levels of government playing significant roles. Incentives have taken the form of floor prices for specific metals, tax holidays for new mines, tax assisted financing schemes, exploration incentives, infrastructure development, energy supply incentives and government mandated contract prices for uranium.

Industrial Minerals

Industrial minerals include salt, gypsum, graphite and nepheline syenite, among a host of other commodities. In 1990, industry revenues amounted to some $300 million. Revenues for salt amounted to roughly 50% of this sub-sectors' revenues. Industrial minerals are largely mined and marketed in the southern part of the province as they are relatively low value commodities which are expensive to transport.

Industrial mineral commodities are generally used as feedstocks in other industries. Salt is used extensively in the chemical industry and to lesser extents in the pulp and paper and food industries. Salt is also extensively used as a de-icing agent in the winter months. Gypsum is primarily used in the fabrication of wallboard and as a component of portland cement. Graphite is used in steel, paints, electrical conductors and engineered plastics.

No aggregate employment or investment data were available for this segment of the industry.

Structural Aggregates

Structural aggregates include sand, gravel, crushed and building stone, clay and shale. They are either mined in quarries or dug from open pits. Other than limestone, they differ from industrial minerals in that they are not used as industrial feedstocks.

The aggregates industry employs some 8000 directly and upwards of 35,000 indirectly. In 1990, production volumes approached some 200 million tonnes and was valued at $1 billion. Per capita consumption of aggregates is close to 20 tonnes and represents one of the highest rates in the world.

Structural aggregates are used for roads, buildings and other infrastructure requirements.

These commodities are largely extracted in Southern Ontario on private land and in close proximity to major urban centres. Structural aggregates produced in Northern Ontario are extracted from deposits on crown lands. Some 1800 producing quarries and pits exist in the south while some 2000 permits are in effect for mineral aggregate production in the north.

Section A-2 Environmental Impacts of Mineral Production

In general, the environmental effects of the mineral industry are not well documented or publicly available. Other than for major environmental programs, data are largely privately generated and maintained. Where available, data are sketchy and do not readily lend themselves to assessment of industry practices. Several recent initiatives at the Ministry of the Environment have begun to address this concern.

The Ministry of the Environment has several current programs under way aimed at monitoring and protecting the environment from mineral development activities including: Count Down Acid Rain, which imposes reduction targets for acid gas precursor emissions to the atmosphere, the Municipal Industrial Strategy for Abatement, which governs the direct discharge of contaminants to water resources, Regulation 308, which governs general air emissions at the point of impingement, and Regulation 309 which governs the generation and management of hazardous waste. Site specific programs are developed as the need arises. Under the Ministry of Mines, Bill 71 has also been recently introduced which will require proper close-out plans and financial assurance for same as a condition of approval.

Environmental effects of mineral production may occur at each stage of mineral development process and range from slight disturbance of flora and fauna during mineral prospecting to considerable regional and local impacts from ore extraction, refining and waste treatment. Environmental impacts affect air, water and land.

Air impacts may include the discharge smelter gases (SO2, CO2 and heavy metals including lead, uranium, cadmium, nickel, copper and zinc) which negatively affect water courses, human health and the health of other biota. Water impacts may include acid drainage from tailing ponds, the release of process effluent streams and run off from tailings. Water contaminants include phenols, acids and alkalis and process specific reagents such as cyanide or arsenic. Land impacts may include removal of over burden, road and infrastructure construction, and waste rock/sludge storage as well as impacts. Access roads pose an additional concern in that they allow broader access to regions which, prior to development, were generally inaccessible to members of the public.

Data, which provide some detail as to the magnitude of environmental impact, have been prepared for Canada. These are outlined below. While Ontario specific data are not readily available, approximations can be made based on the premise that roughly 40% of Canada's mineral output is generated in Ontario.

Some 500 million tonnes of waste rock are generated from mineral operations annually in Canada. Tailings sites currently cover some 15,000 hectares (150 square kilometres). With the average grade of ores declining in most areas, the volume of waste rock will increase proportionately over the coming decades as companies attempt to maintain production levels at current rates.

Some 870,000 cubic meters of effluent water are generated daily by the Canadian mining industry. These effluent contain varying concentrations of contaminants including heavy metals, acids and suspended solids. Treatment of these waste waters results in the formation of some 140,000 dry tonnes of sludge per year which represents roughly 1 million cubic meters of waste material. Sludge is generally unstable from both a physical and a chemical standpoint and must be appropriately managed in perpetuity.

In 1980, some 4.5 million tonnes of SO2 were discharged to the atmosphere in Canada by mineral processing operations. These levels have been significantly reduced following provincial and federal initiatives in 1986 to reduce the discharge of substances that contribute to acid precipitation. Under the Count Down Acid Rain program in Ontario, for example, the four largest sources of sulphur dioxide and nitrogen oxides were (and are) required to reduce their respective discharges by upwards of sixty percent over an 8 year period. These sources included three mining/smelting operations and the provincial electrical utility. Current emissions of these contaminants are within those limits prescribed by the regulations.

Ontario maintains an annual inventory of direct emissions to water courses under the Industrial Discharge Program. Data for this program over the past several years indicate that roughly 33% of mineral processing operations were in compliance with environmental guidelines for a range of contaminant discharges. The contaminants for which industry is monitored include: suspended solids, biological oxygen demand, phenols, oils, grease, and a series of heavy metals including copper, nickel, lead, and iron among others. Mineral industry compliance performance in 1989 was roughly equivalent to its performance in 1988.

Mineral Demand Forecasts

The following table outlines four some what dated forecasts for several commodities that are produced in Ontario for the period covering approximately 1984 to 2000 (2010 in some cases). These forecast summaries outline anticipated demand for specific commodities. Commodity demand forecasts are used by both government and industry to set investment objectives and to allocate resources.

Forecasting mineral prices and volumes over extended periods is highly speculative as both supply and demand are price sensitive. Material substitution also plays an important role in future demand and is not easily predicted.

Integral to commodity forecasts are a series of assumptions made by forecasters in order to gauge demand. Most forecasts are predicated on historical demand and correlations between demand and other economic variables. General assumptions include: rate of increase for Gross National Products; population forecasts; the anticipated rates of private investment, construction activity and industrial production; and a host of other commodity specific/end use assumptions. Projected demand is highly dependent on these underlying assumptions and as a result, represents a best guess estimate.

The following forecasts were generated by the US Bureau of Mines, the World Bank, the East West Centre and by Energy Mines and Resources and were published in the early to mid 1980s.

Commodity Forecasts

Percentage increases in western world/world demand (forecast period)

Mineral	USBM	EMR	WBank	E/W Ctre	Historic Actual
Forecast Period	1984-2000	1984-2000	1984-2000	1986-2010	1980-88
Nickel	3.1/3.1	1.7	1.1	2.8	3.1/2.7
Zinc	1.9/1.9	1.3	1.5	2.1	2.0/1.8
Copper	2.9/2.6	-	1.6	2.1	1.9/1.6
Gypsum	2.6	-	-	-	-
Salt	2.2	-	-	-	0

Key

USBM = United States Bureau of Mines, Mineral Facts and Problems, Bulletin 675, 1985;

EMR = Energy, Mines and Resources Canada, 1988;

W-Bank = World Bank: Price Prospects for Major Primary Commodities, Vol. III, November, 1988;

E/W Ctre = East-West Centre: Soviet Union, China and India - and the World Metals Industry to 2010, 1990.

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APPENDIX B STAKEHOLDER LISTS AND VIEWS - MINERALS

Stakeholders consulted by Task Force

Code Key:
1 = Comments on consultation document.
2 = Brief submitted.
3 = Stakeholder forum or presentation.

INDUSTRY/INDUSTRY AND COMMERCE ASSOC.	CODES
Aggregate Producers Assoc. of Ontario	2
Alcan	1
Cameco	1
Canadian Gypsum	1
Canadian Assoc. of Recycling Industry (Intermetco)	2
Canadian Portland Cement Association	1, 2
Conference Board of Canada	1
CGC Inc.	2
Deak Resources	3
Denison Mines	2
Dickenson Mines	1
Falconbridge Ltd.	1, 2
Lac Minerals	2
Essroc Canada Inc.	2
Lake Ontario Steel Co.	2
Mine Managers Association	3
Minnova Inc. - Winston Lake Division Mine	1
Northern Ontario Prospectors Assoc.	1, 3
NW Ontario Prosp. Assoc.	1, 2, 3
Ontario Chamber of Commerce	2
Ontario Mineral Exploration Fed.	1, 3
Ontario Mining Association	2
Porcupine Prospectors & Developers Assoc.	1, 2, 3
Prospectors and Developers Assoc. of Can.	1, 2
Rio Algom	2
St. Lawrence Cement	1, 2
Stelco	1, 2
Timmins Chamber of Commerce	3

ALL BRIEFS ARE AVAILABLE FOR REVIEW FROM THE ONTARIO ROUND TABLE IN SEPARATE VOLUME.

INDIVIDUALS	CODES
Duff, D.	1
Mandsley, R.	3
McKinnon, D.	3
Parry, S.	3
Waychison, W.	1, 3

NON-GOVERNMENT/NON-INDUSTRY ORGANIZATIONS	CODES
Canadian Environmental Law Assoc.	1
Conservation Council of Ontario	2
Int. Institute of Concern for Public Health	2, 3
North Watch	3
North Care	1, 3
Ontario Public Service Employees Union	3
The Presbyterian Church in Canada	2
United Steel Workers of America Union	3

GOVERNMENT	CODES
Energy, Mines and Resources Canada	1, 2
Ministry of Municipal Affairs	2
Ministry of Treasury & Economics	2
Ontario Hydro	2, 3

EDUCATION	CODES
Queen's University Mining Engineering	2
University of Toronto	2
York University Faculty of Env. Studies	2

ALL BRIEFS ARE AVAILABLE FOR REVIEW FROM THE ONTARIO ROUND TABLE IN SEPARATE VOLUME.

STAKEHOLDER VIEWS - MINERALS

This section of the report documents in summary form the views of stakeholders on issues relating to sustainable development as raised by the Task Force or as identified by stakeholder feedback. Each summary lays out areas where general agreement by the majority of stakeholders exist and gives a range of views on specific issues and options made by stakeholders on each issue.

The consultation document, which outlined eight general issue areas or themes related to sustainability in the sector, was circulated to approximately seventy stakeholders.

What follows is a condensed summary of stakeholder comments received by the Task Force in response to its consultation document, from community and multistakeholder consultations undertaken in Timmins and Toronto respectively, and from individuals, companies and associations that made presentations to the Task Force.

In total, some sixty submissions were received by the Task Force, with roughly half relating to the mineral sector.

The issues for which mineral sector stakeholder views are presented are as follows:

Decision Making;
Information, Education and Measurement;
Technology;
Full Cost Pricing and Accounting;
Recycling; and
Rehabilitation

The mechanisms/issues are presented separately, however, there is considerable overlap among them. If properly managed, they could work synergistically as integrated components of a transition strategy to achieve environmentally sustainable economic development. The two central themes of protecting the biosphere and enhancing competitiveness are reflected in the comments received either directly or indirectly on other issues (mechanisms).

Issue - Decision Making

Stakeholders in the minerals industry were in agreement that the multistakeholder decision making approach is preferable to the current decision making mode. There was an even stronger sentiment expressed by industry stakeholders that partnerships between industry and government needed to be strengthened in some areas including technology and education.

Areas Where General Agreement Exists

1. There was general agreement that decisions be based on scientific understanding rather than emotions. The lack of information was recognized by all stakeholders as representing a significant barrier informed decisions.

2. There were several other decision making elements where broad agreement could be identified including the need for consistent policy among various government ministries, that decision making processes relating to approvals need to be much more clearly defined and communicated to industry participants, and the need for transparency/feedback with respect to public decision making processes.

Other comments raised by stakeholders included:

- need for more effective land use policies and decision making processes, consultations should be on a regional level with clear workable goals
- those most effected by potential risks and rewards of proposed developments should have the most say in terms of conditions placed on such development
- a full analysis of government incentives is needed
- governments should allow a much stronger voice for women in decisions regarding needs and wants
- need to bring in the expertise of the academic community
- an educated public is an important component to multistakeholder processes
- better decisions start with better science
- all stakeholders need to buy into common solutions, stakeholders not governments need to develop solutions
- decision making processes must be more certain, with reasonable timelines and terms, and with approvals by one ministry

Issue - Information, Education and Measurement

As with decision making processes, all stakeholders recognize the need to collect better information relating to environment and economy in the field. The ability of stakeholders on opposite sides of a particular issue to agree to a specific course of action in the absence of clearly defined problems or opportunities is difficult at best.

Areas Where General Agreement Exists

1. Most stakeholders agreed that state of the environment reporting should be undertaken at the provincial and national levels and to the extent possible, that these information systems should avoid duplication. Several members of the prospecting fraternity expressed the concern that undertaking base line studies in advance of exploration and early development activities was asking the impossible.

2. Most stakeholders agree that current prices for goods and services do not reflect the environmental and social costs associated with their production or consumption. As prices play such an important role in a market economy, this represents a significant deficiency in our present market based system.

3. It was also generally agreed that valuing some of these externalities is difficult, but that progress towards doing so needs to be made.

Other comments raised by stakeholders included:

- industry and government need to educate the public about the importance of mining to the provincial economy and to the north
- education will allow recycling to become second nature
- product labelling, education and incentives will encourage recycling
- changes to Ontario's provincial accounts should be consistent with those of Canada and other provinces
- need to measure meaningful things
- need to measure ratio of material recycled to materials consumed, commodity costs and work towards emission levels that are safe and acceptable
- need to educate manufacturers and consumers about planned obsolescence
- need to lower peoples' expectations about material standards of living
- current incentive systems need to be examined
- governments should encourage full disclosure
- environmental assessments of frontier developments should be undertaken
- government should undertake a full assessment of all legislation based on cost benefit principles
- information sharing by stakeholders needs to be explored
- need to assess baseline/ecosystem variability

Issue - Technology - Minerals

All stakeholders recognize the potential to improve both our environmental performance and enhance our competitive position through the development, application and commercialization of cleaner, more resource efficient technologies. This applies for both the producer as well as the consumer.

Technology is highly regarded as the solution by industry. A common perception is that through advanced technology we will eventually be able to solve our economic and environmental problems. The view among environmentalists and others is much more sober about the ultimate contribution that advanced technologies will play.

Areas Where General Agreement Exists

1. That more incentives need to be put in place in order to encourage the development, adoption and commercialization of sustainability enhancing technologies

Major differences in opinion were evident when stakeholders discussed the incentives they felt to be most appropriate.

Industry argued for more lenient tax treatment of expenditures related to environmentally responsible/efficient plant/equipment and joint industry/government regulation committees that set environmental performance standards on what is technically and economically achievable.

Environmentalists would prefer to see stiff penalties for failure to comply with tough regulations based on environment/human health thresholds and/or the "zero" discharge objective as well as resource prices that reflect their full cost.

Economists argue for the use of market based incentives, including emission or discharge taxation and tradeable permits schemes among others, as cost effective means of meeting environmental goals and encouraging efficient use of resources.

Other comments raised included:

- research and development incentives should be provided by government to encourage industry to improve its performance; best available technology that is economically achievable should be required of all sectors
- government represents the largest barrier to the development and use of more environmentally responsible technologies
- market forces should predominate
- need to demonstrate technological capabilities
- public should have a voice in technological developments
- exploit commercialization opportunities of cleaner processing technologies
- market competition and public demand for environmental protection will generate new economic opportunities
- standards should be technology based
- more emphasis is required within universities to focus on industrial needs
- research needs to be goal oriented
- need to follow Japanese and German models of creating a positive climate for research, development and innovation

Areas cited where improved technologies would be beneficial include:

- hydrogeology
- effluent treatment technology
- waste reduction
- new materials
- reclamation
- process techniques
- recycling
- product durability

Issue - Full Cost Accounting and Pricing

Although there was a considerable amount of disagreement raised over this issue, there was also considerable agreement that shifting prices for resources towards their full cost offers significant long term benefits to both our environment and economy.

As expected, the issue of full cost pricing and accounting raised the most debate at either end of the spectrum. More stakeholders recognize the potential down side to poor implementation of this principle than recognize the upside with careful and coordinated implementation. With environmental information being sketchy and scientific certainty on most issues an impossibility, the common ground offered by this mechanism for encouraging sustainable development activities is perceived to be smaller than it is. Opportunities to some seem like the kiss of death to others.

Areas Where General Agreement Exists

1. All stakeholders recognize the need for level playing field internationally so that one jurisdiction is not placed at a competitive disadvantage to another for environmental reasons.

2. Almost all stakeholders advocated that actions not be taken unilaterally that would impair our ability as a society to make necessary changes as the need arises.

While competitiveness is certainly important, there exists a major difference of opinion between certain members of industry and government and others as it relates to sustainability. As defined in certain quarters within industry, sustainable development is interpreted to mean sustaining a particular industry. Members of the environmental movement and others regard sustainable development as sustaining those conditions which support human and other life, even if certain human activities cease to exist.

Other comments raised by stakeholders included:

- measures outlined in consultation paper are draconian, authoritarian, and counter productive
- opportunity cost for resource use should be reflected in price of the product, as should social and environmental costs, life cycle costing should be used
- full cost accounting needs better definition and acceptance
- need to ensure real impacts are reflected in prices
- incentives and consistent regulation are preferable to liability and compensation as a means of fully costing resources
- punitive approaches wont help, incentives need to be tied to regulations

Issue - Recycling

Recycling strikes a positive chord with all stakeholders as an integral component of sustainability. Recycling, as part of resource stewardship, represents both an exportable technology and a sizeable industry in it own right in Ontario.

There were differences of opinion voiced as to how recycling should be promoted.

Certain stakeholders viewed the market as the appropriate vehicle fro determining the rate at which materials should and will be recycled. Others advocate a strong role for government, through legislation, fully costing both virgin and landfill resources, and through favourable taxation treatment, as means of encouraging the recycling of material and reducing the need for resource extraction.

Other comments raised included:

- forget about recycling uranium
- public education, product labelling and incentives are required for recycling
- R&D incentives for recycling and increasing product durability are required
- scrap metal should not be labelled as hazardous waste, need common definition of waste
- resource recovery and recycling should be promoted
- should conserve the use of metals once they have been produced from ore
- tax incentives should encourage 3Rs, industry should use recycled material
- recycling will be driven by market prices, government legislation and incentives, we should look at discontinuing wasteful practices

Issue - Rehabilitation of Mine Sites

There was general agreement that abandoned sites (some - not all) need to be restored.

Also, there was general agreement that the Crown bears some responsibility since mines operated responsibly within limits of law of the day.

A minority of industry stakeholders argued that industry should bear some responsibility and that the financial obligations should be a function of reserves and revenues from existing properties. All others from industry argued that past operations fell within legal requirements of the day and that liability should not be applied retroactively to current owners.

There was disagreement that mining should be treated differently from other business activities that may result in liability with respect to land (gas stations cited as an example through leaking underground storage tanks).

Other comments raised by stakehodlers included:

. quarried lands should be able to be restored by landfilling
. don't saddle the mineral belt district with ongoing liability
. tailings should be characterized for potential reuse
. public should pay for aesthetic clean-ups

APPENDIX C MINERALS CONSULTATION DOCUMENT

Sustainable Development Options & Alternatives

Brief Background to Ontario's Mineral Sector

Metals (precious and base)

Metal mining, smelting and refining is largely a northern Ontario based industry and is a major employer in single industry towns. The industry generates some $8 billion in annual revenues and directly employs some 35,000 and indirectly employs a further 50,000. Major base metal groups mined include nickel, copper, and zinc. Precious metals mined include gold, silver and platinum. Most metals mined in Ontario are sold in foreign markets where prices are cyclical, set internationally, and denominated in U.S. currency.

Mining is a capital and energy intensive industry which is dependent on highly skilled labour and ongoing investment in exploration. Salaries and wages in the mining industry represent roughly 50% of the cost structure for mining operations.

Base metals are used in the fabrication of durable and non-durable manufactured products and extensively in the construction industry. Precious metals are used in jewelry, in specific manufacturing applications such as catalysts, and for hoarding.

At present, there are some 59 operating mines in Ontario.

Industrial Minerals

Industrial minerals including gypsum, salt, sand, gravel, stone, graphite and cement, are largely mined or quarried in Southern Ontario.

Sand and gravel are used extensively in the construction of buildings and the fabrication and surfacing of roads. Gypsum is the primary component of drywall. Salt is an important raw material in numerous chemical processes and is used extensively for the de-icing of roads. Graphite is used in a number of commercial applications including steel, paints, electrical conductors and engineered plastics.

Markets for industrial minerals are mainly regional with prices being influenced by the availability and supply of the commodity and the transportation distance from the source of supply.

Some 155 million tonnes of aggregate were produced in Ontario in 1989. Sand, gravel and stone represent some 95% of this quarried material. Nearly 2100 permits for pits and quarries were in effect.

Per capita consumption of metals and minerals in Ontario is in line with that of most OECD nations.

Canada wide, some 534 mining operations exist including 115 metal, 114 non-metal, 149 sand and gravel, 128 stone and 28 coal.

Issue 1: Working Together for Better Decisions

Most Ontarians have some degree of interest in this sector of our economy and in the lands upon which this activity takes place. Either directly through employment in the industry, as corporate shareholders, or as native peoples with unresolved land claims in areas where resource development could take place, or indirectly as consumers of products which use minerals. At present, there are few opportunities for all stakeholders and constituencies to work together to improve the quality of decisions made regarding mineral resource management and environmental protection.

Historically, government and industry have cooperated closely to commercially develop Ontario's mineral resources. Incentives for mineral development and problem resolutions are largely crafted in consultation with industry and industrial associations. More recently, government has weighed the positions of industry and the views of other stakeholders on matters of public policy in this field.

As part of a more constructive and broadly based consultative approach, information sharing among all stakeholders could be an important first step. The establishment of multisectoral processes to define problems, set priorities, improve information flow and facilitate cooperative dialogue can greatly improve the quality of decisions we make. The development of standards for the emission of contaminants to the air, land and water through multistakeholder processes could also be a further means of reducing conflict in this sector. Cooperation among all stakeholders in the establishment of baseline data banks on the state of the natural environment prior to development of mineral deposits may also be worthy of consideration.

What other options exist to improve the quality of decisions made regarding resource development and environmental protection in this sector?

Comments_____

Issue 2: Responsibility for Past Operations

Past performance in the mining and mineral processing industries has left a significant legacy of abandoned mines and tailing sites. In Ontario alone, some 3000 abandoned mine sites serve as reminders of past mineral development, with approximately 80 of these posing some degree of hazard to human health and the environment. Government has assumed responsibility for some but not all of these properties. Significant work is required to return these lands to acceptable form. Cost estimates for this work are in the order of $3 billion over a 15 year period.

A similar legacy exists with the past development of industrial mineral deposits, where approximately 19,000 hectares of quarried land require restoration. To date, some 350 hectares of land have been adequately restored.

Recent revisions to the Mining Act will require more environmentally responsible behaviour on the part of industry such that the abandoned mine and tailing legacies will not get any worse. The Pits and Quarries Act requires that mineral developments be undertaken with proper site close-out and site rehabilitation once the resource has been mined. The latest provincial budget outlines program activity in this area.

What are the most appropriate means of ensuring these legacies are adequately dealt with? Who should bear responsibility for the costs involved and how should such expenditures be treated for tax purposes?

Comments_____

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Issue 3: Protecting the Biosphere

Mineral development entails environmental impacts throughout all stages of the development cycle, from preliminary exploration to road access construction and site preparation, to mineral extraction and refining, to mine close out and rehabilitation. Mineral transportation to markets also impose stresses on the biosphere.

Mining and mineral processing are energy intensive, generate significant volumes of contaminants and solid waste and may result in contaminant emissions to water and air. Heavy metals and sulphur based acids can leach from reactive tailings into surface and ground water sources. While only a small percentage (0.02%) of provincial lands have been directly affected by mining and mineral developments, many issues concerning land uses in environmentally sensitive, protected and urban areas need to be addressed.

The development and adoption of "Clean Process" technology is one avenue to reduce the environmental impacts associated with mining as is the greater adoption of the concept of resource stewardship by industry and government throughout the life cycle of the resource. The Mining Act has recently been revised to ensure greater environmental stewardship by industry and emphasizes the prevention of environmental damage. The Ministry of Environment, through its Municipal Industrial Strategy for Abatement Program and with anticipated revisions to Regulation 308 concerning air quality, will be requiring increasingly stringent standards for environmental protection as the 1990's progress. The collection and dissemination of better baseline information concerning the state of the natural environment in advance of mineral development taking place is one further option. Controlling the rate of ore body development and placing greater emphasis on conservation of natural resources are other potential solutions.

What other options exist to reduce the environmental impact of mineral development activities in Ontario? Which offer potential for export and commercial development?

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Issue 4: Ensuring Mineral Resources and Products Reflect their Full Cost

An essential component of sustainable development is that the development activity undertaken be both economic in its own right and as ecologically responsible as possible. To this end, subsidies for resource development and the operation of facilities which negatively impact the surrounding environment represent non-sustainable forms of development. Pollution and waste represent resource use inefficiencies. Moving towards processes and products which do not pollute or generate volumes of waste represent opportunities to improve the macroeconomic efficiency of the Ontario' economy. Several options exist to encourage society to move towards a system of full cost accounting and pricing including:

- Discharge/Emission taxes
- Financial Assurance for mine closure and restoration
- Increased Capital Cost Allowance rates for process modifications aimed at reducing pollution
- Expanding accounting practices to reflect environmental liabilities
- Providing standing/compensation to those adversely affected by resource development
- Phase-in of regulatory requirements
- Greater consistency in government enforcement programs

What are the most appropriate ways of ensuring that mineral resource development and use reflect their full cost to society?

Comments

Issue 5: Recycling of Minerals within our Economy

Over the past decade increasing attention has been directed at the recycling of metals as supplemental sources of supply. Recycling rates for scrap metals are impressive and have benefitted both our environment and economy. Recycled rates for several metals in 1989 were 19% for zinc, 36% for aluminum, 43% for iron, 44% for copper, 45% for nickel and 61% for lead. The recycling of metals reduces the flow of materials to landfill, significantly reduces the energy requirements for reprocessing of metal (by percentages ranging from 94 for aluminum to 74 for iron), employs people in a value added industry and extends the effective life of our ore reserves. All of these benefits are consistent with the principles of sustainable development.

Metal/mineral recycling in Canada currently involves some 20 primary metallurgical plants, 500 other operations, 100,000 direct and indirect jobs, and represents material values in the order of $6 billion.

Current classification and transportation regulations for certain hazardous wastes, however, limit the ability of metal refiners to recover economic grades of scrap and waste metals from the waste stream. Hazardous waste classification based on "leachate" procedures where the material is not destined for landfill may need to be reconsidered.

To a lesser extent, recycling of industrial minerals has also occurred. Increasing attention has been directed at the recycling of drywall, and construction wastes have been redirected from the waste disposal stream into services normally filled by primary materials. Increasing costs of landfill have in part provided the incentive to manage these "resources" in a more sustainable manner.

What further actions need to be taken to increase the economic and environmentally responsible recycling of metals and minerals in our economy?

Comments

Issue 6: Resource Conservation and Stewardship

A key measure of societal welfare, given the rapid growth in human population and rising expectations for material well-being around the globe, should be how efficiently we meet the needs of each generation. Coupled with this objective should be an enhanced ability of society to measure our impact on the systems which support life. To this end, resource conservation and stewardship represent options to reduce the impact our current development patterns have on the environment while preserving options for future generations to meet their own needs.

To the extent we can improve the management of our mineral resources, through reducing waste, increasing the efficiency of processing, and maintaining better accounting of our resource stocks, both in the ground and circulating within our economy, the better off our economy and environment will likely be. Closing the loop on mineral flows within our economy also represents an opportunity to increase the services and value derived from these resources.

Efforts in the material sciences field must also be considered as integral components from a sustainable resource management perspective. New material development including composites, ceramics and specialty plastics and their use in products or processes can improve the performance (durability, energy efficiency, or range of operation) of the product or process. For example, fibre optic cables have virtually displaced copper from voice and data transmission within much of our telecommunications infrastructure, improving both the quality of service provided and the economics of information exchange. Disused telephone transmission lines now represent a considerable source of copper.

What are the appropriate roles of conservation, resource stewardship and new material development in managing our mineral resources for the longer term?

Comments_____

Issue 7: The Role of Technology in Sustainability

New technology will play a central role for both industrialized and developing countries in their transition to sustainability. Technological developments over the past few decades have led to significant reductions in the environmental impacts of development within the mineral industry as well as improving the economic viability of mining and mineral operations.

In industrialized jurisdictions such as Ontario, "clean" process/product and effective recycling technology represent sound business development opportunities that could improve our both our environment and our economy, through human resource development, technology commercialization and licensing, and product/technical services export.

Barriers to successful implementation of technological solutions have included economic considerations, lack of information or understanding about specific technological capabilities, relatively poor historical understanding of the impact of chemical contaminants on the environment and less than effective communication among decision makers, researchers and operations people within industry and government.

Recently, there have been many examples of industry and universities working much closer together to identify and resolve difficult environmental and technical problems. Continued interaction between practical and theoretical sectors is essential. But financing this important work requires significant expenditures on research, development and implementation.

Many existing technologies have encouraged and resulted from our once through economic system of resource development, conversion to consumer products, and product disposition after limited in-service lives. New technology will need to encourage a more "economic" and environmentally responsive system where resources are used in continuing cycles and products have extended in service lives.

Several options for encouraging the development and adoption of sustainable technologies include promoting and expanding the work of the "Centres of Excellence" in mineral and materials technology, fostering a positive climate for industry to increase its focus on sustainable technology (increasing the "Capital Cost Allowance" rates for plant and equipment installations aimed at reducing the environmental impact of operations), and encouraging technology transfer between developers and users.

What other options exist to encourage the development and adoption of economically viable and environmentally sound process and product technologies in this field?

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Issues 8: Measuring Progress Towards Sustainability Goals

Conventional indicators of economic performance and related reporting systems may not be adequate for the task of measuring progress towards our sustainable development goals. In addition, good baseline ecosystem and human health response data is lacking. New measures and

systems which account for resource capital and environmental effects of economic activity will be needed at the corporate, provincial and national levels.

Some possible macro-level measures include: non-renewable resource use; ratio of recycled to virgin materials used; tonnes of sulphur and nitrogen oxides emitted per unit of production activity, and number of sites requiring restoration.

Full cost accounting is the way in which corporations and public sector agencies will need to report on their use of the energy resources, the stocks and flows of natural resources, and the environmental effects of mineral development and use. Generally Accepted Accounting Principles are now the standard and work is under way by the Canadian Institute of Chartered Accountants to extend these principles to include Generally Accepted Environmental Accounting Principles (GAEAP).

The concept of full cost accounting may also need to be extended to the level of national or provincial accounts (Gross Domestic Product). Several international demonstrations of this approach are currently under way. As well as reporting economic output, associated natural resource capital stocks and flows and environmental emissions could be reported on a provincial and national level to provide a more complete picture of the inputs and outputs associated with economic activities.

What other considerations need to be incorporated into our measurement systems to reflect progress towards sustainable development in this area?

Comments_____

Please Complete the Following information:

Organization _____

Address _____
No. Street Unit/Suite

_____
City/Town Province Postal Code

Telephone _____
Area Code Number

Facsimile _____
Area Code Number

Individual Responding Mr./Ms./Miss/Mrs./Dr. _____

Position/Title _____

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Area Code Number

Please give details of Constituency/Membership whose views are represented

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Would you like to receive a copy of the draft task force report for comment? Yes ☐ No ☐

Thank you for your response and for being part of the Ontario Round Table on Environment and Economy!

Kindly return your brief and comments to:

Roger Higgin, Chair
Energy and Minerals Task Force
c/o Ontario Round Table Secretariat
790 Bay Street, Suite 1003
Toronto, Ontario M7A 1Y7

Your response will form part of the public record.